

# ADVANTAGES OF TWO NEW APPROACHES FOR SCIENTIFIC E-PUBLISHING

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This article tries to show the advantages of an alternative way for the publication of manuscripts, that is, the Metajournal. It is based on the following idea: authors of scientific journals can submit an abstract to this facility and editors and referees can routinely scan the Metajournal to find out good manuscripts. On the hand they can get in touch with the authors to publish the manuscript and on the other hand the author can freely choose the most adequate journal in which publish his or her research. As a result of this, a new role may appear in science, that is, the journal scanner or journal scout. However, The metajournal can also be used for those manuscripts that were rejected by journals. The editor of the journal that rejects a manuscript has the possibility to send it to The Metajournal, in this way it is available not only for editors and referees but for everybody.

**Keywords:** Metajournal; journal scanner/ scout; peer review; journals; electronic publication; referees.

## INTRODUCTION: SOME PROBLEMS OF THE CURRENT PEER REVIEW SYSTEM

Scientific journals are both the means by which the scientific community certifies accumulations and additions to its body of accepted knowledge and the means by which scholars compete for recognition [1], [2]. Journal quality rests on the selection process by which manuscripts are evaluated before publication, that is, the “*peer review system*”. Typically, two or more reviewers assess the soundness of a manuscript’s ideas and results, its methodological and conceptual viewpoint, its quality, and its potential impact on the world of science [1].

The history of science shows that many important discoveries were initially resisted or ignored by scientists [3]; [4]. Some important discoveries were “*premature*” because they did not fit in the common paradigms and/or their implications could not be connected by a series of simple logical steps to the existing scientific knowledge [5]. In other instances, some theories or discoveries collided with the dominant paradigms in science and they were resisted with scepticism. Some instances of famous scientists that have encountered resistance to their discoveries are Arrhenius (electrolytic dissociation theory), Mayer (first version of the first law of Thermodynamics), Eyring (theory of the activated complex in chemical reactions), Fermi (the beta decay) or Joule (mechanical equivalent of heat) [6], [7], [8], [9],[10],[11].

The worse scenario can also play out: scientific contributions effectively silenced [12], [13], [14] and prevented from being published for years (please see an example of an article that appeared in 1957 in the Journal of the American Chemical Society, 25 years after it was

initially submitted [15]). Some of the most cited papers of all times were initially rejected by referees of scientific journals [9]. In addition, the most cited articles published in some scientific journals were previously rejected by other journals [6], [8].

Even Nobel class articles have been rejected outright by referees and editors who did not grasp their potential and innovativeness. For example, we have identified instances in which 27 future Nobel Laureates encountered resistance on part of scientific community towards their discoveries and instances in which 36 future Nobel Laureates encountered resistance on part of scientific journal editors or referees to manuscripts that dealt with discoveries that on later date would assure them the Nobel Prize [7], [10], [11].

A related phenomenon is the “*delayed recognition*” [16], [17]. A typical article that shows delayed recognition, as a general rule, receives very few citations and it may not be cited at all for years, until the scientific community begins to recognise the value of the article or the scope of its implications which are reflected in the surge of citations that the given article receives, a clear sign that it has been “*discovered*” by the scientific community [17]. Curiously enough, the article which shows this phenomenon is usually published in widely read journals, therefore the delayed recognition phenomenon cannot be attributed to lack of access to scientific information.

In a previous study, we have completed previous work on the resistance to scientific discovery from scientists, expanding the analysis to a wide population of prestigious researchers who have found resistance from other scientists to their discoveries. We surveyed a sample of scientists who are authors of highly cited or very influential articles and other scientists’ members of the National Academy of Sciences (USA) [11].

We have classified the reasons that led to an initial rejection by referees and editors of scientific articles, which, in time, are showed as influential or so relevant. We have studied the differences in disciplines such as Chemistry, Biology, etc., on the incidence of resistance to scientific discovery. We have obtained new instances of delayed recognition, that is, discoveries that initially go unnoticed but some years later they attract the attention after their initial publication. An additional objective was the analysis of the strategies used by researchers to overcome resistance to scientific discovery and the lack of initial recognition from the rest of the academic community.

The examples previously described should help us to understand better the social dimension of scientific discovery. Scientists often face challenges related not only to the research difficulties and must also convince peers that their achievements are worth to be published and accepted. The common conception concerning science emphasises the serene analysis of contributions and the unbiased evaluation of any contribution, but this is not always true. The Nobel Laureate Stanley B. Prusiner confirmed this view when he wrote “*while it is quite reasonable for scientists to be sceptical of new ideas that do not fit within the accepted realm of scientific knowledge, the best science often emerges from situations where results carefully obtained do not fit within the accepted paradigms*” [18]. The fact that some of the articles reporting new findings or discoveries that were initially rejected would earn their authors much deserved recognition and the most important scientific award, casts doubts on the current publishing policies which govern dissemination of new information. There is something wrong with the peer review system when an expert considers that a manuscript is not of enough interest to be published and later the work reported in such rejected paper earn the Nobel Prize for their authors.

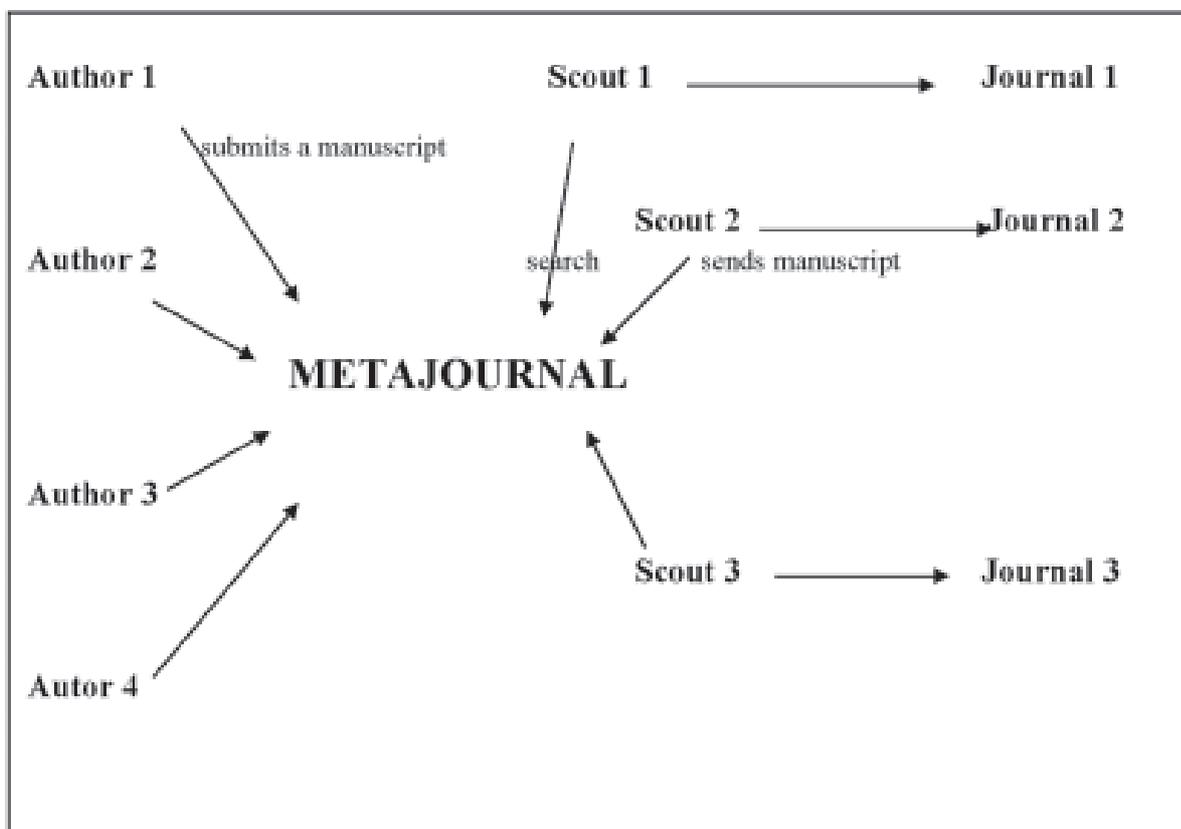
Challenging scientific paradigms is difficult because most scientists educated within current theories and working with them have little incentive to examine unconventional ideas and proposals. Dissident scientists have to use alternative journals and attend conferences

dedicated to alternative viewpoints. Another strategy is publishing on the web [22]. The most prestigious scientists serve as editors and referees for high impact journals. Even for an open-minded or sympathetic referee it is not possible to spend time examining alternative ideas that challenge the current paradigms. Thus, it is difficult for them to accept work that challenges those standards. Editors of scientific journals argue that they have to reject many papers because they contain mistakes, are not of sufficient quality or novelty, or just because journal space is scarce. They also want to protect readers from bad science.

We may thus need new channels for communicating alternative theories and views, and some new fresh journals are appearing to fill this void, such as the journal *Speculations in Science and Technology*. In Economics, for example, some journals like *International Journal of Forecasting* seek papers with controversial findings, call for interesting papers, or publish papers that challenge common practices and beliefs.

**FIRST SOLUTION: REFEREES AND EDITORS SEARCHING FOR GOOD PAPERS IN AN OPEN FORUM (THE METAJOURNAL)**

Elsewhere, it has been proposed a new system intended to reduce the chances that manuscripts with innovative ideas or results are rejected or delayed by reluctant referees [20], [21]. In short, it has been suggested the creation of a central facility (Metajournal) in each discipline. Authors of scientific articles would submit an abstract to this facility. Editors and referees (“*journal scouts*”) would routinely scan the Metajournal to locate good manuscripts and, then would contact authors about publishing the manuscripts (see FIGURE 1).



**FIGURE 1. HOW THE METAJOURNAL WORKS**

The potential author could feel free to choose the most adequate journal in which publish his or her scientific contribution. With this new system a new role may appear in science: the journal scanner or journal scout. The mission of this editorial board member would be seeking and procuring manuscripts for the journal.

The Metajournal is different from other approaches as *Pubmed Central* ([www.pubmedcentral.nih.gov](http://www.pubmedcentral.nih.gov)) or the *arXiv e-Print archive* ([arxiv.org](http://arxiv.org)) in which submissions are submitted and logged. The Metajournal is not a repository but an open market of Smanuscripts.

Some advantages of this system are:

1. Many innovative and unorthodox papers would be made available to interested readers, given that many journal scouts would be searching for good papers.

2. The role of journal editors and referees could be squared with openness to unorthodox but potentially important contributions.

3. This approach is compatible with the usual peer review system and with double blind review. With this system the names and affiliations of authors are removed from the manuscript and are kept confidential. Double-blind review is motivated by a desire to preserve anonymity and thereby assure fair play.

4. The Metajournal would be less vulnerable towards misconduct, plagiarism and breach of confidentiality by referees given that the names of journal scouts searching the Metajournal would be recorded.

5. Under the current system authors compete for journal space. The situation is favourable to leading journals since they keep on receiving high impact papers. Even modest journals, using some vigorous editorial policies plus good scouting teams, could manage to get good papers improving their prestige and impact.

6. This system would speed up the processing of manuscripts.

7. There are strong evidences that demonstrate that many rejected papers are submitted again to other journals without significant changes of content [1]; [2]. With the Metajournal, the task of shopping around for an acceptance could be eliminated for all practical reasons and left totally in the hands of interested journals.

8. Referees' reports could be logged into an electronic journal (The Journal of Referee Reports) and made available to readers for a routine access. Referees and editors would be more accountable for their decisions.

9. Any scientist could serve as a freelance referee to judge contributions submitted to the Metajournal in an open format. Editors and readers should judge the quality of the reports written by these freelance referees.

10. In an attempt to eliminate some of the drawbacks of the peer review system, many journals resort to a double blind review system, keeping the names and affiliations of both authors and referees confidential. Double blind reviewing is motivated by a desire to preserve anonymity and thereby assure fair play. This approach is compatible with the Metajournal.

11. Referees' reports could be logged into an electronic journal and made available to readers for a routine access. Referees and editors would be more accountable for their decisions.

The new system has some apparent problems that could be solved:

1. The misuse of the Metajournal could be prevented with the usual passwords systems and secure servers used to avoid fraud on Internet.

2. To prevent fraud, each prospective author should send to the managers of the Metajournal a signed form authorized by the representatives of his research institution.

3. Prospective authors can encrypt the manuscript to avoid plagiarism. Only journal scouts in possession of the keys and decoders would be able to read these submissions. In addition, authors could send open contributions, so, the priority over their discoveries could be fully recognized and publicly registered.

4. Another solution consists of recording the identity of journal scanners who read a given submission thus making that person responsible for security of submitted papers.

## **SECOND SOLUTION: REJECTING PAPERS AND SENDING THEM TO THE METAJOURNAL.**

Another possibility to avoid the problems discussed in the introduction would be that every issue of any journal devote a page to a list of authors and manuscript titles that have been recently rejected plus a full URL address in the journal web page from which an electronic version of the rejected manuscript can be downloaded [22]. These rejected manuscripts would be labelled as “*rejected but available*” or the editor of the first journal could submit them automatically to the Metajournal.

Some advantages of this system are:

1. Authors of papers could choose between this approach and the traditional system in which their manuscripts are processed confidentially and rejected without resubmission to the Metajournal.

2. The phenomenon of “*delayed recognition*” could be avoided in many instances because the rejected papers would be available in the Metajournal. They could also be indexed by databases and located by search engines.

3. Editors and referees could judge papers, but this task would be compatible with openness to unorthodox but potentially important contributions because they could be available in the Metajournal, after a first round of refereeing.

4. Double blind review is compatible with this new approach.

5. Many manuscripts that are not published because of lack of space in the journals could be still be made available to readers in the journal website or sent to the Metajournal in which they could be rescued.

6. It exists a bias against replication [1], [2]. Journals prefer to publish new discoveries and to reject manuscripts that merely replicate previous findings. With this new system, manuscripts that replicate previous studies could be rejected but still made available in the Metajournal.

7. There is a strong evidence that, especially in the biomedical sciences, journals publish papers in which only statistically significant results are reported [23], [24], [25], [26]. Again, with our system, this bias could be reduced. Thus, we could avoid that other researches waste time, money and effort in pursuit of blind paths.

8. Readers of scientific journals could evaluate the soundness of the referee decisions.

The main disadvantage of this system can be turned into an advantage. Given that a public rejection can be embarrassing, only when scientists strongly believe in their work would be likely to accept that his or her paper is submitted to the Metajournal after a first rejection. Readers of scientific journals would know that there is a self-evaluation and self-selection by authors of papers to avoid the embarrassing situation of having papers submitted to the Metajournal and labelled as “*previously rejected*”. Actually, we could speculate about what would happen if this system were used in all academic journals.

## CONCLUSIONS

Judging from some of the previously discussed examples, the danger that the peer review system disregards or suppresses important discoveries is real and it can be disastrous. The systems that we suggest could contribute to avoid these problems. The Metajournal would originate a new role in science (the “*journal scout*”), while the second system would result in less censorship in science. Peer review will probably be used for many years as the primary mechanism of control and selection in academic journals. However, as new technologies are changing the communication patterns of scientists, in some hotly disputed areas of research, researchers are leaning heavily on electronic mail to report their results. As it is often said, the reader is the ultimate referee.

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